

Compared to the lush, green pastures of the Southeast, the prickly cactus, leathery shrubs, and coarse grasses of the American Southwest may make these dry, rugged ecosystems seem harsh and inhospitable.

Yet the ranges of Arizona and New Mexico and, across the border, the Mexican states of Chihuahua and Durango, sustain healthy herds of grazing animals. Cattle, sheep, and goats can thrive on actively managed landscapes, as can pronghorn antelope and whitetail deer. Other creatures can also flourish there, including quail, jackrabbits, and small, wild pigs called javelinas.

To help American and Mexican ranchers keep this ecosystem—and their profits—in good health, USDA scientists and colleagues in Mexico are collaborating on a unique new project. Similarities in the plants, soil, climate, and land uses along both sides of the border make this project a logical move and a likely success.

The collaboration is designed to bring two different decisionmaking aids to the rancher's desktop computer. One, from ARS, is a computerized model called MODSS (pronounced *modes*), short for "multi-objective decision support system." Ranchers and watershed managers in the two countries will be able to use it to evaluate the pros and cons of many options or combinations of options for solving conservation problems on their lands. Those concerns could include, for example, accelerated erosion, a decline in the forage species that livestock prefer, or loss of water quality.

A sister USDA agency, the Natural Resources Conservation Service, will computerize its planning model called SWAPA+H.

That's short for "soil, water, air, plant, and animal resources plus humans." The resource agency's rangeland management specialists use it when invited by ranchers to help pinpoint

conservation-related problems that—if unresolved—would undermine the health of the rangelands. SWAPA+H yields combinations of proven, practical solutions to solve the problems.

But it's up to the rancher to evaluate those alternatives. That's where MODSS comes in. It helps ranchers look at and weigh the potential impact of each alternative on each of the natural resources that are in the SWAPA+H model. Both models empower ranchers, because they complement and augment the rancher's own storehouse of knowledge and experience.

Plans call for converting SWAPA+H into a downloadable form that would be available to ranchers in English and Spanish. MODSS is already computerized. Ideally, ranchers and other natural resource managers would use SWAPA+H and then MODSS—in that order—to develop or revise their management plans.

The collaboration includes researchers Jeffry J. Stone and Philip Heilman at the ARS Southwest Watershed Research Center, Tucson, Arizona; and Jeffrey E. Herrick at the ARS

Jornada Experimental Range in Las Cruces, New Mexico.—
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